

WHAT IS CLAIMED IS:

1. An amplifier comprising:

a first amplifier circuit which amplifies a first signal to output an amplified first signal;

5 a circuit which outputs a second signal

corresponding to a difference between the first signal and the amplified first signal;

a second amplifier circuit which amplifies the second signal to output an amplified second signal;

10 a combine circuit which outputs an amplified

signal by combining the amplified second signal with the amplified first signal; and

a controller which controls a supply of a power to the first amplifier circuit and the second amplifier circuit and has a first mode to supply the power to the second amplifier circuit without supplying the power to the first amplifier circuit.

20 2. The amplifier according to claim 1, wherein the controller has a second mode to supply the power to the first amplifier circuit without supplying the power to the second amplifier circuit and has a third mode to supply the power to the first amplifier circuit and the second amplifier circuit.

25 3. The amplifier according to claim 2, wherein the controller selects one of the first mode, the second mode and the third mode in accordance with an output level of the amplified signal.

4. The amplifier according to claim 1, wherein
the amplified signal is selected and outputted from
a group of the amplified first signal, the amplified
second signal and a signal reduced a distortion
5 component from the amplified first signal by using
the amplified second signal.

5. The amplifier according to claim 4, wherein
the amplified signal is selected in accordance with
an output level of the amplified signal.

10 6. The amplifier according to claim 4, wherein
the amplified signal is selected in accordance with
a mode selected by the controller which has a second
mode to supply the power to the first amplifier circuit
without supplying the power to the second amplifier
15 circuit and has a third mode to supply the power to
the first amplifier circuit and the second amplifier
circuit.

7. The amplifier according to claim 4, wherein
the combine circuit includes

20 a coupler which combines the amplified second
signal with the amplified first signal; and
a selecting circuit which selects and outputs one
of a signal output from the coupler and the amplified
second signal which bypasses the coupler.

25 8. The amplifier according to claim 7, wherein
the coupler outputs the amplified first signal if
the second amplifier circuit fails to be supplied with

the power.

9. The amplifier according to claim 7, wherein the selecting circuit selects the amplified second signal which bypasses the coupler if the first 5 amplifier circuit fails to be supplied with the power.

10. The amplifier according to claim 1, wherein the controller includes:

an acquisition unit configured to acquire a control signal which designates an output level of 10 the amplified signal; and

a supply unit configured to supply the power to the second amplifier circuit without supplying the power to the first amplifier circuit in accordance with the output level.

15 11. The amplifier according to claim 1, wherein the controller includes:

a detection unit configured to detect an output level of the amplified signal; and

20 a supply unit configured to supply the power to the second amplifier circuit without supplying the power to the first amplifier circuit if the output level is less than a preset threshold value.

25 12. The amplifier according to claim 1, wherein the second amplifier circuit includes a plurality of amplifiers connected series and the number of connected ones of the plurality of amplifiers is changeable.

13. A feedforward amplifier comprising:

a first amplifier circuit which amplifies a first signal to output an amplified first signal;

5 a second amplifier circuit which amplifies a second signal to output an amplified second signal, the second signal corresponding to a difference between the first signal and the amplified first signal; and an output circuit which outputs an amplified signal selected from the amplified first signal, the amplified second signal and a combined signal reduced 10 a distortion component from the amplified first signal by using the amplified second signal;

15 wherein the feedforward amplifier has three operation modes comprised of a first mode to supply a power to the second amplifier circuit without supplying the power to the first amplifier circuit, a second mode to supply the power to the first amplifier circuit without supplying the power to the second amplifier circuit and a third mode to supply the power to the first amplifier circuit and the second amplifier circuit, and the output circuit outputs the amplified second signal in the first mode, the output circuit outputs the amplified first signal in the second mode and the output circuit outputs the combined signal in the third mode.

25 14. The amplifier according to claim 13, wherein each of the first mode, the second mode and the third mode is selected in accordance with an output level of

the amplified signal.

15. A radio communication apparatus comprising:

an antenna; and

a radio unit configured to supply, to the antenna,

5 a signal output from the amplifier according to

claim 1, the radio unit including the amplifier.

16. A radio communication apparatus comprising:

an antenna; and

a radio unit configured to supply, to the antenna,

10 a signal output from the feedforward amplifier

according to claim 13, the radio unit including the

amplifier.